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ARTICLE

Lessons from Regulating Carbon Offset Markets

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Abstract
To support carbon markets, regulators must engage in a continuous process of learning. This article explores offsets regulation in the compliance markets of Europe, the United States and China, alongside the Clean Development Mechanism, to identify what has been learnt since offsets were initiated. We argue that offsets regulation must learn to work with demands for commercial viability, environmental sustainability and political legitimacy. We find that the learning here recommends greater control of the shares, sectors, sources and standards of offsets than was initially chosen. The findings provide some cautious optimism about the scope for improvements to such market mechanisms.

Keywords: Market Regulation, Offset Markets, Regulatory Learning, Commercial Viability, Environmental Sustainability, Political Legitimacy

1. INTRODUCTION

This article is a study of lessons learnt and improvements made in the regulation of carbon offset markets. That regulation relates to the world's key emissions trading schemes, namely, the European Union (EU) Emissions Trading System (ETS), emissions trading in China and the United States (US), the latter covering both the California trading scheme and the Regional Greenhouse Gas Initiative (RGGI), along with the United Nations (UN) Clean Development Mechanism (CDM).[1]

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1 Directive 2003/87/EC of 13 October 2003 establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and amending Council Directive 96/61/EC [2003] OJ L275; National Development and Reform Commission Notice on Initiating Pilot Emissions Trading Programs (People's Republic of China) National Development and Reform Commission, Order No. [2011] 2601, 29 Oct. 2011; Global Warming Solutions Act of 2006 (State of California); Regional

The principal purpose of this article is to identify the improvements that have been made to offsets regulation. Across the schemes, we find that regulatory reforms aim to tighten the markets in offsets in four respects: the shares, sources, sectors and standards of offsets. In identifying these improvements, we aspire to cast light on the process of learning that informs the improvements. The premise is that, when new markets are constituted, continuous learning is crucial to the success of the regulation.[2] Our research identifies learning in the regulation of the offset markets. Most of that learning is learning by doing, by which we mean learning from the administration and operation of the schemes. Yet, learning is a broader process: it is derived from the deliberation and consultation that occurs within the ongoing processes of lawmaking within the schemes.[3] In the global context of carbon offsets, the study of other schemes and the exchanges between schemes can also be sources of learning.[4]

Learning is not merely about how to enhance technical design settings, but also about how to optimize the capacity and commitment of the market participants and how to deal with various political challenges.[5] To capture learning in all its permutations, we argue that regulators must respond to three disparate demands for success, namely, commercial viability, environmental sustainability and political legitimacy. Drawing on regulatory studies, these demands are what we would expect to see in a legally constructed market mechanism for environmental protection. But they also emerge inductively through our study of the offset regulatory schemes.

Responding to these demands stimulates learning, but it can also reveal that the scope for improvement is limited. In our analysis of the schemes, we note the competitive tension between the demands. Thus, making regulation more stringent serves environmental sustainability, but when bad credits are allowed onto the markets, sustainability is traded against commercial viability. When bad credits are permitted to remain on the market, political legitimacy is preferred over environmental sustainability.[6] Moreover, we do not argue that the regulation is explained entirely by learning.

Greenhouse Gas Initiative, Overview of RGGI CO_2 Budget Trading Program, available at: http://www.rggi.org/docs/program_summary_10_07.pdf; COP Decision 17/CP.7 Modalities and Procedures for a Clean Development Mechanism, as defined in Article 12 of the Kyoto Protocol, UN Doc FCCC/CP/2001/13/Add.2, 21 Jan. 2002, available at: http://unfccc.int/resource/docs/cop7/13a02.pdf.

2 For instance, C. Scott, 'Reflexive Governance, Regulation and Meta-Regulation: Control or Learning?', in O. de Schutter & J. Lenoble (eds), *Reflexive Governance: Redefining the Public Interest in a Pluralistic World* (Hart, 2010), pp. 43–63, at 63. See further J. McDonald & M. Styles, 'Legal Strategies for Adaptive Management under Climate Change' (2014) 26(1) *Journal of Environmental Law*, pp. 25–53; C. Sabel & J. Zeitlin, 'Experimentalism in the EU: Common Ground and Persistent Differences' (2012) 6(3) *Regulation & Governance*, pp. 410–26; and C. Holley, N. Gunningham & C. Shearing, *The New Environmental Governance* (Earthscan, 2012).

3 According to Scott (ibid., at pp. 47 and 57), learning applies to both interactive goal formulation and interactive implementation.

4 See further P. Bosch, H. Jorgens & K. Tewa, 'The Global Diffusion of Regulatory Instruments: The Making of a New International Environmental Regime' (2005) 598 *Annals of the American Academy of Political and Social Science*, pp. 146–67.

5 S. Gilad, 'It Runs in the Family: Meta-Regulation and Its Siblings' (2010) 4(4) *Regulation & Governance*, pp. 485–506.

6 By bad credits we mean doubtful reductions in emissions, reductions that come too cheaply, or reductions with negative side effects.

In complex decision-making systems there are many factors at work – including ideology, strategizing and expediency – which can curtail improvement. Nevertheless, overall we are positive about the contributions that learning by public regulators makes to the success of the regulation of carbon offset markets.

1.1. *Why Learn?*

Before we report on what has been learnt, we should make some brief framing remarks about learning itself, about who learns, why they learn and how they learn. We locate this learning in the regulation of carbon offset markets. Offsets are a device to enlist reductions in emissions that others have made. Offsets are sold into voluntary markets, but they are mostly traded in compliance markets where the buyer (a public or private entity) has a legal rather than a moral obligation to mitigate emissions. Offsets increase the compliance options for the undertakings concerned. The demand for offsets provides an incentive for others to mitigate emissions, which may make an activity such as renewable energy generation or the preservation of native forests economically competitive with polluting activities.

Regulators must continue to learn when they are uncertain how markets will perform and when they have to work with a plurality of actors.[7] Complex and changeable conditions seem to be a fixture of modern regulation. Especially when creating new markets, regulation is likely to be exploratory and experimental. The interplay of technological, economic, political and social variables means that regulation will have to be negotiated and adjusted. On this basis, Peeters and Weishaar foresaw early on the need for learning in the regulation of carbon markets.[8]

In our analysis, we track the learning process with reference to three basic demands that are placed on regulators: to pursue commercial viability, environmental sustainability and political legitimacy.[9] An examination of how offsets regulators mediate these demands creates insights into the lessons that have been learnt and the improvements that have been made.

Here, we briefly characterize the three demands to provide reference points for the ensuing analysis, where we draw out their expression and interplay.

- *Commercial viability* is the capacity of the regulation to constitute the carbon commodities, in this case offsets, so that they might act as cost-effective options for compliance. A crucial role for regulation in this sector is to create sufficient demand for the offsets. Important factors to consider here are whether regulation

[7] This point is stressed in each of the frameworks cited above: see Scott, n. 2 above, at p. 50; McDonald & Styles, n. 2 above, at p. 27; Sabel & Zeitlin, n. 2 above, at p. 412, and Holley, Gunningham & Shearing, n. 2 above, Ch. 5.

[8] These scholars emphasized the role of 'learning by doing', picking up on the application of this concept to the EU ETS by the Court of Justice of the European Union (CJEU) in the 2008 *Arcelor* case (Case C-127/07, *Société Arcelor Atlantique et Lorraine and Others* v. *Premier Ministre, Ministre de l'Écologie et du Développement Durable and Ministre de l'Économie, des Finances et de l'Industrie* [2008] ECR I-9895 (*Arcelor*): M. Peeters & S. Weishaar, 'Exploring Uncertainties in the EU ETS: "Learning by Doing" Continues Beyond 2012' (2009) 3(1) *Carbon and Climate Law Review*, pp. 88–101.

[9] They are similar to the three reasons why, according to Peeters and Weishaar (ibid., at pp. 88–101), the period of learning was not at an end: (a) design complexity and lack of a priori information, (b) fluctuations in economic conditions, and (c) political and legal contingencies.

provides sufficient incentives to invest in fuel switches and other longer term sustainable mitigation strategies such as forestation, and as part of this process whether prices should be fixed or instead left to find their equilibrium on the free market.

- *Environmental sustainability* is the capacity of regulation to secure emissions mitigation. Through standard setting and quality control, regulation seeks to ensure that offsets contribute genuine, additional and lasting reductions. Sustainability, moreover, includes considerations of whether the regulation prevents perverse effects on the environment beyond mitigation, or promotes economic and social co-benefits for certain groups or localities.
- *Political legitimacy* is the capacity of regulation to garner support from governments, the private sector and local communities. It is needed to counter political threats such as the erosion or repeal of the scheme. Regulation should be able to meet legal challenges, challenges to the principles or procedures of the scheme, claims that existing rights should be upheld, and calls for accountability on the part of the governing bodies.[10]

At the outset, we stress that it is a complex interaction. So, for instance, we might expect improvements to commercial viability and environmental sustainability to bolster political legitimacy; however, correcting for initial errors and strengthening standards may not always be regarded as politically legitimate.

1.2. *Who Learns?*

To use a market mechanism as a policy instrument is said to fit well with the economics and politics of neo-liberalism.[11] Some suggest that it also fits well with a learning approach to regulation. Because of its process of decentralized decision making, which revolves principally around transaction and price, a market could be regarded as an optimal mechanism for learning. Yet, markets may not learn well unless they are driven to do so; some centralized coordination is required.[12] Social studies show that markets are not regulated simply by economics.[13] Technology, politics and law play vital roles in constituting markets and maintaining their operations. For regulators, the challenge is to find the appropriate mix between these elements. For new markets such as the carbon market, this is a regulatory work in progress.[14]

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10 Generally, see J. Black, 'Constructing and Contesting Legitimacy and Accountability in Polycentric Regulatory Regimes' (2008) 2(1) *Regulation & Governance,* pp. 137–64. For application to offsets regulation, see M. Paterson, 'Legitimation and Accumulation in Climate Change Governance' (2010) 15(3) *New Political Economy*, pp. 345–68.

11 I. Bailey, A. Gouldson & P. Newell, 'Ecological Modernization and the Governance of Carbon: A Critical Analysis' (2001) 43(3) *Antipode*, pp. 682–703, at 685; J. Penca, 'Marketing the Market: The Ideology of Market Mechanisms for Biodiversity Conservation' (2013) 2(2) *Transnational Environmental Law*, pp. 235–57, at 253.

12 Holley, Gunningham & Shearing, n. 2 above, at p. 3.

13 A. Lang, 'The Legal Construction of Economic Rationalities' (2013) 40(1) *Journal of Law and Society*, pp. 155–71, at 157; P. Bordieu, *The Social Structures of the Economy* (Polity, 2006).

14 M. Callon, 'Civilizing Markets: Carbon Trading between *in vitro* and *in vivo* Experiments' (2009) 34(3/4) *Accounting, Organizations and Society*, pp. 535–48, at 542.

This study focuses on the role and the learning behaviour of public regulators in carbon markets. We acknowledge the need for regulation to enlist the private sector's capacity and commitment.[15] Carbon markets rely heavily on the competence and engagement of private sector participants: compliance buyers, project developers, local communities, secondary traders, financial institutions and professional services all learn how to operate in these markets. Yet, without public regulation, commercial viability or environmental sustainability is not guaranteed. Offsets might not be produced or traded; those that are can be corrupted or degraded.[16]

Public regulation plays a vital role in structuring the markets and harnessing the capacity and commitment of the market participants.[17] Voluntary offset markets have developed, although the public sector is largely responsible for creating the demand for offsets as well as regulating the quality of supply. There is private regulation, too, such as standard contracts and trading exchanges, but public regulation largely defines the commodity to be traded, identifies the parties who may do so, and fosters the integrity of the trading practices and terms of trade.[18] Public regulators are in a position to collect knowledge and make structural adjustments to the schemes.[19]

1.3. *Methodology*

The understanding that public regulators are pivotal players in the development of carbon markets shapes the methodology of our study. We appreciate that schemes are polycentric, with multiple actors, levels and nodes of governance, but we consider it productive to focus on the learning of the responsible executive agencies and the changes they propose to the regulation.[20] The agencies we selected to research are:

- the European Commission's Directorate-General (DG) for Climate Action (DG CLIMA);
- the California Air Resources Board;
- the environment departments of several of the members of the RGGI;

15 We do not go as far as others to say that the demarcation between regulator and regulated, or principal and agent, breaks down: see Scott, n. 2 above, at p. 47; Sabel and Zeitlin, n. 2 above, at p. 411.

16 L. Lohmann, 'Uncertainty Markets and Carbon Markets: Variations on Polanyian Themes' (2010) 15(2) *New Political Economy*, pp. 225–54, at 246; E. Cloatre & N. Wright, 'A Socio-Legal Analysis of an Actor-World: The Case of Carbon Trading and the Clean Development Mechanism' (2012) 39(1) *Journal of Law and Society*, pp. 76–92, at 87.

17 Brousseau and Glachant call this reflexive market regulation, meaning the state regulation of markets: E. Brousseau & J. Glachant, '"Reflexive" Market Regulation: Cognitive Cooperation in Competitive Information Fora', in de Schutter & Lenoble, n. 2 above, pp. 23–41, at 33.

18 For application to carbon markets, see M. Lederer, 'Market Making via Regulation: The Role of the State in Carbon Markets' (2012) 6(4) *Regulation & Governance*, pp. 524–44, at 526; S. Bogojević, *Emissions Trading Schemes: Markets, States and Law* (Hart, 2013), at p. 174. Note that here we do not cover the regulation of the conduct of the *trading* in the primary, secondary or derivatives carbon markets.

19 Brousseau & Glachant, n. 17 above, at p. 32.

20 We appreciate that these are not the only public bodies involved in regulation, but we shall treat the others, such as the legislatures, as forming part of the context for the learning of the executive agencies, in particular about political legitimacy.

- the China National Development and Reform Commission; along with
- the Executive Board of the CDM.

Our study draws from the extensive scholarly work already undertaken in the field of emissions trading regulation and researches recent documentary evidence to identify the lessons being learnt by the targeted executive agencies and the improvements they are making. We supplement this library research with soundings from interviews with regulators in Albany, Beijing, Boston, Brussels, London, and Sacramento. These were semi-structured interviews conducted on site, each around an hour in duration. We asked questions about the components of the schemes, including offsets. We inquired into structuring and standard setting, particularly with regard to learning. For ethical reasons, the interviews were conducted under conditions of anonymity. Consequently, we have used the interviews to gain insights and provide leads; we do not attribute viewpoints to officials.

The study begins with the principal supply scheme, the CDM. It moves to the main buyer scheme, the EU ETS, and then examines the trading schemes of California and the RGGI in the US, and finally the pilot schemes in China. Because of their central roles, the CDM and the EU receive most attention. The EU, particularly, is the main market for the CDM generally and, via CDM linkage, for offsets from China. California and the RGGI are smaller but still significant markets, and China is potentially a huge domestic market.

1.4. *Learning Modes*

Within our inclusive framework, learning occurs in a variety of ways. The learning we take into account may be informal and ad hoc or it may be planned and structured.[21] We also expect learning to occur through the ongoing legislative, executive and judicial processes of lawmaking in the schemes, as well as through the monitoring and evaluation of the schemes' administration and operation. Furthermore, learning may result from introspection within a jurisdiction or it may flow between jurisdictions that face common problems.

We see instances of structured learning at various points within the offsets schemes. The schemes learn by undertaking preparatory work and exposure drafts, conducting pilots and trials, and moving through phases and reviews.[22] For example, the requirement that Californian regulators prepare regulatory impact statements structures learning,[23] as does the provision in the EU ETS for evaluation and revision at the end of Phases 1 and 2.[24]

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21 McDonald & Styles (n. 2 above, at p. 29) say that learning takes three basic approaches: trial and error, passive adaptation, and active adaptation or structured learning. Similarly, within Holley, Gunningham & Shearing (n. 2 above, at p. 102), a contrast is made between passive, process-based and systemic learning.

22 See the case studies below about the CDM, the EU ETS, the Californian cap-and-trade scheme, the RGGI, and China's emissions trading pilot programmes.

23 See, e.g., Californian Air Resources Board, 'Final Environmental Analysis for the First Update to the Climate Change Scoping Plan', 15 May 2014, available at: http://www.arb.ca.gov/cc/scopingplan/2013_update/appendix_f_final_ea.pdf.

24 See Section 3 below on the offset regulations in the EU ETS. For example, Regulation (EC) No. 1123/2013 on Determining International Credit Entitlements, n. 77 below.

Given the scale and diversity of the schemes, learning occurs also in other, more unruly, ways. Opportunities for learning include conversations between government agencies; inputs from corporate, industry and trading associations; studies and submissions from non-governmental organizations (NGOs) and universities; and participation in international forums and the new hybrid environmental governance bodies.

Learning is not always easy. In particular, an open and experimental learning process might run up against a demand for legal certainty and accountability.[25] It encounters an argument that change in regulation is politically illegitimate; that it is a breach of existing rules and a challenge to established rights. It is said that market mechanisms are especially vulnerable in this regard because they work through property and contract, which both thrive on stability.[26]

However, in our view, legalities vary and, in particular, to pass enabling legislation is not necessarily to fix rules or establish rights. Regulation is made progressively, an example being the development of protocols and methodologies for approving various types of offset activity within the CDM or the Californian and Chinese schemes. Given that the schemes are polycentric, an executive agency may have to seek cooperation and acceptance from other authorities in the scheme, such as the ministries and legislatures. Furthermore, the agency will consult with representatives from the private sector; it will receive submissions and be subject to lobbying. Learning is also stimulated by judicial review. Even if judicial review is precipitated by a claim to uphold existing rules or safeguard established rights, the court may decide otherwise.[27] Therefore, we maintain, legal processes may be treated as opportunities for learning constructively.

Such fluidity characterizes all our examined schemes, though naturally the modes of learning vary somewhat between them. For example, given the multi-level governance nature of the EU, the approval points would appear to be more polycentric within the EU ETS regime than in the other schemes. Then again, we might not expect political legitimacy to take the form of the assertion of legal rights in China as much as it does in California. However, generalizations can be dangerous, which is why field work is important.[28]

This approach to learning also accommodates inter-jurisdictional learning. The schemes are different but they are also connected; they share and accumulate knowledge. This finding is in keeping with the notion of governance networks that extend horizontally over jurisdictional lines. Sometimes interactions between the schemes are formally ordered. One ambition of the offset trading schemes is to enable linkage.[29]

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25 Peeters & Weishaar, n. 8 above.

26 Holley, Gunningham & Shearing, n. 2 above, at p. 5.

27 M. Peeters, 'The EU ETS and the Role of the Courts: Emerging Contours in the Case of *Arcelor*' (2011) 2(1) *Climate Law*, pp. 19–36.

28 See, e.g., Carbon Market News, 'Chinese Firms Turn to Courts in CER Rows with European Buyers', *Point Carbon*, 11 Apr. 2014, available at: http://www.rightsandresources.org/news/reuters-chinese-firms-turn-to-courts-in-cer-rows-with-european-buyers.

29 See S. Goers & B. Pfluglmayer, 'Post-Kyoto Global Emissions Trading: Perspectives for Linking National Emissions Trading Schemes with the EU ETS in a Bottom-Up Approach' (2012) 3(1) *Low Carbon Economy*, pp. 69–79; J. Peel, L. Godden & R. Keenan, 'Climate Change Law in an Era of Multi-Level Governance' (2012) 1(2) *Transnational Environmental Law*, pp. 245–80.

For instance, through the CDM, offset developers in China are linked with the compliance buyers in the EU ETS. Following the Western Climate Initiative (WCI), the California and Quebec emissions trading schemes are linked and learn from each other.[30] Yet, it is possible also to detect the cultivation of all sorts of informal interactions, through conferences and exchanges for instance, or through such forums as the World Bank Partnership for Market Readiness.[31]

2. CLEAN DEVELOPMENT MECHANISM

The CDM has been the main mechanism for offsets since 2003. Established under the Kyoto Protocol[32] pursuant to the United Nations Framework Convention on Climate Change (UNFCCC),[33] the CDM allocates decision making between the Conference of the Parties (COP), the Executive Board (EB), the secretariat provided by the UNFCCC, and the designated national authorities, with delegation of some verification functions to the designated operational entities.[34] This article focuses on the EB, which has scope to act, subject to the policy directions of the COP. At the same time, it is constrained by its own constitution, its reliance on governance in the supply and demand states, and its need to draw on expertise from other sources.

2.1. *Shares, Sectors and Sources*

A small voluntary market for CDM offsets exists, but the main demand comes from compliance buyers. Under the Kyoto Protocol, the so-called Annex I parties undertook to reduce their emissions during the first commitment period, 2008–12, by an average of at least 5% against the baseline year of 1990 levels, and were to meet these targets principally through direct domestic measures. At the same time, the Annex I parties had access to supplementary means to meet their targets through three market-based mechanisms (also known as 'flexible mechanisms' or 'Kyoto mechanisms').[35]

Joint Implementation (JI) allows Annex I countries to purchase emissions reduction units (ERUs) from projects in other Annex I countries. Moreover, Annex I countries may purchase certified emissions reductions (CERs) from mitigation projects that are undertaken in non-Annex I countries (developing and least developed countries). Governments may purchase and trade the CERs and ERUs themselves, or they may require private parties to acquire and surrender these Kyoto units towards

30 E.M. Bailey et al., 'Issue Analysis: Linkage with Quebec in California's Greenhouse Gas Emissions Cap-and-Trade Market', 20 Sept. 2012, available at: http://www.arb.ca.gov/cc/capandtrade/emissionsmarketassessment/linkage.pdf.

31 Partnership for Market Readiness, 'About the PMR', 2013, available at: http//www.thepmr.org/content/about-pmr. See further Bosch, Jorgens & Tewa, n. 4 above.

32 Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol), Kyoto (Japan), 11 Dec. 1997, in force 16 Feb. 2005, available at: http://unfccc.int/kyoto_protocol/items/2830.php.

33 New York, NY (US), 9 May 1992, in force 21 Mar. 1994, available at: http://unfccc.int.

34 Decision 17/CP.7 Modalities and Procedures for a Clean Development Mechanism, as defined in Article 12 of the Kyoto Protocol, UN Doc FCCC/CP/2001/13/Add.2, 21 Jan. 2002, available at: http://unfccc.int/resource/docs/cop7/13a02.pdf.

35 Kyoto Protocol, n. 32 above, Arts 6, 12 and 17.

compliance with a domestically mandated emissions cap-and-trade scheme. Consequently, the main buyers of CERs and ERUs have been those installations subject to the caps in the EU ETS.

The CDM thus provides an incentive for non-Annex I countries to make reductions and supply CERs. The CDM did not limit the volume of offsets that could be produced. It was also accommodating about the sectors from which they could be drawn. The main control was the land use, land-use change and forestry sector (LULUCF), which was restricted to afforestation and reforestation activities.[36] Instead, the CDM would approve offsets on an open project by project basis.

The CDM has been successful in generating a large flow of credits; it claims that, by 2013, CERs accounted for 1.4 billion tonnes of reductions in carbon.[37] A sophisticated service sector of investors, developers, traders, auditors, accountants and lawyers has clustered around the CDM.

Now, however, demand is dropping dramatically and the market price of CERs is close to rock bottom.[38] Investment in both new and existing projects is waning and trading desks and practice groups are closing.[39] National compliance markets have ceased to proliferate and those which are operating have become wary of the CDM.[40] It is unclear how the CDM will fit with the new market mechanisms that have been proposed at the recent COP meetings.

Furthermore, the CDM has generated a supply of credits of questionable environmental integrity.[41] For some, the objection to offsets is fundamental. Reductions should be made at source and the developed nations should not be able to buy indulgences from their poorer neighbours, at least not through a market mechanism.[42] Those who accept the idea of offsets may still object that the CDM has concentrated on the compliance supply stream and not paid enough attention to the net mitigation or sustainable development effects of the offsets. The CDM has accommodated dubious offset activities, such as the reductions in waste from industrial gases, and approved reductions on a self-contained project by project basis.[43] Most of the supply has been sourced in a few advanced developing countries that should instigate their own cap-and-trade schemes.

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36 Further information is available at: https://cdm.unfccc.int/Projects/pac/pac_ar.html.

37 P. Stiansen, 'Executive Board of the Clean Development Mechanism Progress Update', Question and Answer Session presented at the UNFCCC COP19, Warsaw (Poland), 12 Nov. 2013, available at: http://unfccc4.meta-fusion.com/kongresse/cop19/pdf/131112_1315_pr2_CDM_EB_QandA_Warsaw_rev2.pdf.

38 N. Chestney, 'U.N. Carbon Price Forecasts to 2020 Cut Further: Reuters Poll', *Reuters News*, 2 Oct. 2012, available at: http://www.reuters.com/article/2012/10/02/us-carbon-poll-idUSBRE89109V20121002.

39 W. Straw & R. Platt, *Up in Smoke: How the EU's Faltering Climate Policy is Undermining the City of London* (Institute for Public Policy Research, Nov. 2013).

40 See the analysis below of the cap-and-trade schemes. Overall, see the table in Goers & Pfluglmayer, n. 29 above, at p. 77.

41 R. Glicksman & T. Kaime, 'A Comparative Analysis of Accountability Mechanisms for Ecosystem Services Markets in the United States and the European Union' (2013) 2(2) *Transnational Environmental Law*, pp. 259–83.

42 G. Winter, 'The Climate is No Commodity: Taking Stock of the Emissions Trading System' (2010) 22(1) *Journal of Environmental Law*, pp. 1–25.

43 P. Erickson, M. Lazarusa & R. Spalding-Fecher, 'Net Climate Change Mitigation of the Clean Development Mechanism' (2014) 72 *Energy Policy*, pp. 146–54.

For CDM supporters, on the other hand, its decline is to be deplored, not just for the sake of the CDM, but because the CDM could provide the circuit through which compliance schemes link markets and harmonize standards.[44] The CDM has encouraged learning in developing countries such as Brazil, China and Mexico, and it may inspire them to adopt their own compliance schemes. The fear is that a CDM collapse would kill interest in offsets altogether, though it may instead foster a turn to more domestically sourced and regulated varieties.

2.2. *Standards and Governance*

The CDM has improved its quality control over time. From a mere 20% of projects at its inception, 60% of projects were receiving substantive examination by 2009.[45] The CDM has gathered a professional staff and built a library of methodologies. It has started to favour more standardized approaches to establishing baselines and assessing the additionality of reductions.[46] The guidelines for acceptance of industrial gas projects are to be revised.[47] The EB exercises greater oversight of third-party verifiers (the designated operational entities).[48]

These improvements seem to show that the CDM can learn and reform its operations. Yet, environmental sustainability and political legitimacy remain challenges, with doubts that CDM governance is capable of responding.[49] Along these lines, some of the buyer and seller countries may consider that they have insufficient influence in the decision making. They worry that the process is politicized and marred by conflicts of interest. There is concern that the EB does not effectively manage the secretariat or the designated national authorities;[50] transparency and accountability are thus seen to fall short. Lacking especially is a channel through which to express concerns that projects are not contributing or are even detrimental to sustainable development.[51] Finally, there is

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44 UNFCCC (Kyoto Protocol), COP 18, Summary Report of the Ministerial Dialogue about the Role of Market Mechanisms under UNFCCC, Doha, 4 Dec. 2012, available at: http://cdmpolicydialogue.org.

45 M. Gillenwater & S. Seres, 'The CDM: A Review of the First International Offset Program' (2011) (3–4) *Greenhouse Gas Measurement and Management*, pp. 179–203.

46 A. Michaelowa, 'Interpreting the Additionality of CDM Projects: Changes in Additionality Definitions and Regulatory Practices over Time', in D. Freestone & C. Streck (eds), *Legal Aspects of Carbon Trading: Kyoto Protocol, Copenhagen and Beyond* (Oxford University Press, 2009), pp. 248–71.

47 Carbon Market Watch, 'Summary of the 70th CDM Executive Board Meeting', available at: http://carbonmarketwatch.org/wp-content/uploads/2013/03/Summary70thEBmeeting_CarbonMarket-Watch.pdf.

48 Annual Report of the Executive Board of the Clean Development Mechanism to the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol, UN Doc FCCC/KP/CMP/2013/5 (Part I), 24 Oct. 2013, at p. 13, available at: http://unfccc.int/resource/docs/2013/cmp9/eng/05p01.pdf.

49 M. Krey & H. Santen, 'Trying to Catch Up with the Executive Board: Regulatory Decision-Making and Its Impact on CDM Performance', in Freestone & Streck, n. 46 above, at pp. 231–47; F. Ekardt & A. Exner, 'The Clean Development Mechanism as a Governance Problem' (2012) 5(4) *Carbon and Climate Law Review*, pp. 396–407.

50 I. Shishlov & V. Bellassen, '10 Lessons from 10 Years of the CDM', CDC Climat Research, *CDC Report No. 37*, Oct. 2012, available at: http://www.cdcclimat.com/IMG/pdf/12-10-05_climate_report_37_-_10_lessons_from_10_years_of_cdm.pdf.

51 For example, K. Wilson, 'Access to Justice for the Victims of the International Carbon Offset Industry' (2011) 38(4) *Ecology Law Quarterly*, pp. 967–1031.

real concern that local communities and indigenous peoples are displaced by offsets projects.[52]

In response to these concerns, the United Nations Climate Change Secretariat instructed the CDM to undertake a High Level Review.[53] The Review Panel recommends 55 actions to secure market stability, adapt to new conditions, enact operational reforms, and strengthen governance. The recommendations conveniently collect what has been learned about the CDM. To protect the CDM from fluctuations in demand, the Panel recommends that a stabilization fund be established and excess credits could be held in a reserve fund. In addition, public funds should be enlisted to make up the shortfall in private purchases.

On the supply side, the Panel recommends that the CDM adapt its products to the new market mechanisms, while keeping its project-based approach available to developers. The Panel nominates the sectoral approaches contemplated in the EU (see Section 3 below), the Reducing Emissions from Deforestation and Forest Degradation scheme (REDD), and the national green climate funds. The Panel urges the CDM to be proactive in developing standards, particularly regarding the verification of reductions and the tracking of outcomes. It should seek out further opportunities to coordinate standard setting, accreditation, registration and the issuing of credits among the producing countries.

To meet these challenges, the Panel recommends that the CDM reform its processes. More stress should be placed on ensuring net mitigation effects. Particularly recommended are more standardized approaches to the assessment of the additionality requirement. Assessments should be sector rather than project based, activities should be categorized as positive and negative, and measures should shift from financial tests to tests that value the adoption of new technologies. A second set of reforms should enhance the benefits of the CDM for low-income countries. A useful step in this direction would be the introduction of a practice of aggregating and approving smaller sustainable development projects that operate at the level of households and local public services.

The Panel recommends that CDM governance be strengthened in several ways. The composition of the EB should be revised, codes of conduct and limited terms established for members, and the EB should give greater responsibility to the secretariat. Decision making should be devolved further to the national authorities, though this should occur within a system that sets standards and provides avenues for appeal, so that participants can be more certain of the rules.

The operation of the CDM has now been extended to 2020,[54] and there are signs that it can implement the recommended improvements. The EB has established a

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52 See S. Thomas, P. Dargusch & A. Griffith, 'The Drivers and Outcomes of the Clean Development Mechanism in China' (2011) 21 *Environmental Policy and Governance*, pp. 223–39 on the impact of hydro-electricity dam projects.

53 CDM, 'Climate Change, Carbon Markets and the CDM: A Call to Action', Report of the High Level Panel on the CDM Policy Dialogue, Bangkok (Thailand), 2012. The full set of recommendations is set out at pp. 5–8 of the Report.

54 UNFCCC, COP Decision 1/CMP.8, Amendment to the Kyoto Protocol pursuant to its Article 3, Paragraph 9, UN Doc FCCC/KP/CMP/2012/13/Add.1, 28 Feb. 2013.

Policy Dialogue Research Programme and commissioned a series of papers.[55] Under the direction of the COP, the EB is reviewing CDM modalities and procedures and making improvements to standards, such as baseline and monitoring methodologies.[56] Standardization may make it harder for diverse small-scale projects to gain approval[57] so the EB has established a working group to develop methodologies for small-scale projects.[58] There is promise in the new 'Programmatic CDM', which includes a framework to accommodate small-scale project activities. Afforestation and reforestation activities are also receiving attention. Furthermore, the governance issue is identified squarely among the research and review topics, though reforms are still slow to come.[59] A limiting factor is that major structural reforms are beyond the remit of the EB.

It is on the demand side that improvements are most likely to founder. Outside the CDM's control the prospects of a new international agreement remain uncertain, and that agreement would need to embrace the CDM. The CDM is also considering its place in new and emerging market mechanisms. Meanwhile, the compliance schemes are easing the CDM out. The public funds are only partly picking up the slack. Just a few countries so far (such as Denmark, Japan, Norway, Sweden and the United Kingdom) have pledged to buy up units. The Green Climate Fund has made a start, but it has yet to receive its grants from the member countries. Consequently, it is fair to say that the fate of the CDM hangs in the balance.

3. EUROPEAN UNION

With the ETS in Phase 3, the EU has the benefit of learning. If the initial emphasis was on commercial viability, it is evident that the scheme should become more discriminating about the sources and sectors from which environmentally sustainable and politically legitimate offsets are obtained. All the same, several factors – including structural complexity, Member State protectionism, the entitlements of existing buyers and sellers, and weak governance in the supplier states – could mean that improvements happen slowly. The combination of economic, sustainability and legitimacy demands may thus constrain the EU from responding quickly enough.

The EU is manifestly a polycentric regulatory system, with decision making on offsets split in a complicated fashion between the European Commission, the European Parliament, the Member States and the Court of Justice of the European Union (CJEU). The Commission, which is the focus of our analysis, must gain approval from these other actors for most policy changes. Nonetheless, the Commission has been active in learning lessons and promoting improvements to the offset regulation.

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55 Further information is available at: http://www.cdmpolicydialogue.org/research.

56 For example, CDM, *CDM Methodology Booklet* (UNFCCC, 2013), ss 3 and 4.

57 Cloatre & Wright, n. 16 above, at p. 84; H. Lovell & D. Liverman, 'Understanding Carbon Technologies' (2010) 15(2) *New Political Economy*, pp. 255–73, at 264.

58 CDM, 'Executive Board Meeting Report', CDM-EB78, 31 Mar. to 4 Apr. 2014.

59 See CDM, 'Research Area: Governance', CDM Policy Dialogue Research Programme, Final Edited Report, 1 Oct. 2012. For example, the proposal to establish a review procedure has been postponed.

The EU's 2004 Linking Directive made CERs and ERUs available to installations that are liable to meet the cap.[60] Determining the offsetting ratio was initially largely left to the Member States and then the market participants. Now, we discern that control is being centralized within the Commission to give environmental sustainability more weight. In the longer term, we would expect such centralized control to enhance the commercial viability and political legitimacy of the offsets too. However, for the time being, there is friction between the three objectives, which slows down the rate of adjustment. Adjustments may come too late to make a difference.

3.1. *Shares*

During Phase 1, the Linking Directive did not control the proportion or share that offsets could contribute to compliance, compared with reductions at source or the use of allowances to emit. Instead, the Member States' national allocation plans fixed the maximum volume of units that each covered installation was entitled to use for compliance purposes. The Directive then relied on the installations affected to invest in production of offsets or buy them on the markets. In the EU, this devolution of governance to the Member States responds to a demand for political legitimacy. Possibly, the Member States and the market participants also had a better sense of the commercial viability of offsets, though in Phase 1 it was a moot point for there were very few available at this time to purchase.

The environmental sustainability of the Kyoto units received little scrutiny at the start. The provision for offsets signified the EU's support for the CDM and created an incentive for developing countries to make reductions consistent with 'sustainable development'. At the same time, the EU decided to rely on the CDM for quality control. It also relied on the Kyoto Protocol's principle of supplementarity to ensure that offsets played a minor role in meeting the targets at home compared with reductions at source and allowances to emit.[61]

In its review for Phase 2, the Commission learnt that its initial settings were loose.[62] The generous first allocation of emission allowances, the decisions contained in the national allocation plans made by the Member States, combined with the decline in industrial activity as a result of the recession in Europe, created a surplus and sent the price of compliance down. Furthermore, while some had opted for low volumes of offsets, in the larger Member States the percentages were as high as 20.[63]

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60 Directive 2004/101/EC amending Directive 2003/87/EC establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community, in respect of the Kyoto Protocol's Project Mechanisms [2004] OJ L 338/18.

61 The principle of supplementarity is one of the main principles of the Kyoto Protocol (n. 32 above, Arts 6, 12 and 17). The concept is that internal abatement of emissions should take priority over external participation in flexible mechanisms.

62 Communication from the Commission to the Council and the European Parliament, Assessment of National Allocation Plans for the Allocation of Greenhouse Gas Emission Allowances in the Second Period of the EU Emissions Trading Scheme accompanying Commission Decisions of 29 November 2006 on the national allocation plans of Germany, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Sweden and the United Kingdom in accordance with Directive 2003/87/EC, COM (2006) 725 final, 29 Nov. 2006, at para. 1.

63 M. Pohlmann, 'The European Union Emissions Scheme', in Freestone and Streck, n. 46 above, pp. 337–66, especially the table at p. 355.

Fearing a further price collapse, the Commission decided in 2006, among several measures, to apply limits to the use of CERs and ERUs.[64] The Commission took the step of prescribing a formula to calculate the precise percentage of Kyoto units that each Member State could concede to their installations. It would be a percentage of the other means available to the installations for compliance.[65]

The Member States were still to enjoy considerable discretion. Overall, throughout Phases 2 and 3 the units could comprise as much as 50% of the reductions required.[66] This concession meant that around 1.6 billion units could be used for compliance, the equivalent of 13.4% of the allowances issued.[67] Even if the calculation formula indicated a lower percentage, Member States could allocate at least a 10% share for offsets. This compromise indicates political legitimacy problems.

In seeking to make adjustments, the Commission received feedback about its capacity to make improvements via cases before the CJEU. When the Commission rejected two Phase 2 national plans on the basis that Member States had set the caps too low and provided too many allowances, Estonia and Poland were successful in challenging the Commission's authority to make this judgement. As Bogojević observes, that ruling is about the division of regulatory power (or political legitimacy) between the Commission and the Member States.[68]

However, in the *Arcelor* case[69] the Court dismissed a challenge from the private sector and affirmed the Commission's authority not only to impose caps on existing installations but also to extend the coverage of the caps sector by sector, to let prices fluctuate depending on the market, and to cancel allowances when installations were transferred. As Peeters explains, this decision recognized the novelty and uncertainty of the regulatory task and supports an incremental learning or learning by doing approach to regulation.[70]

By Phase 2, CERs and ERUs were in plentiful supply. By the end of Phase 2, close to 1.2 billion Kyoto units had been surrendered towards EU ETS compliance, which amounts to around 6% of compliance overall.[71] Yet, the full quota for 1.6 billion Kyoto units was not exhausted.[72] Additional units were banked in the scheme and more were in the production pipeline from projects that were approved.

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64 Communication, n. 62 above, at para. 2.3

65 A. Ellerman, F. Convery & C. de Perthuis, *Pricing Carbon: The European Union Emissions Trading Scheme* (Cambridge University Press, 2010), at p. 58.

66 Further information is available at: http://www.carbonretirement.com/content/eu-ets-phase-iii-new-rules-game.

67 Ellerman, Convery & de Perthuis, n. 65 above, at p. 272.

68 S. Bogojević, 'EU Climate Change Litigation, the Role of the European Courts, and the Importance of Legal Culture' (2013) 35(3) *Law & Policy*, pp. 184–207, at 194.

69 N. 8 above.

70 Peeters, n. 27 above, at p. 35.

71 European Commission, DG Climate Action, 'Continued Incentives for Use of Project-based International Credits in the EU ETS', 29 Jul. 2014, available at: http://ec.europa.eu/clima/policies/ets/linking/index_en.htm.

72 Sandbag Climate Foundation, 'Help or Hindrance? Offsetting in the EU ETS', Nov. 2012, at p. 6, available at: http://www.sandbag.org.uk/site_media/pdfs/reports/Help_or_Hindrance_Offsetting_2012_3.pdf.

The scheme was reviewed once again for Phase 3. This review raised six options for reform:

(a) to increase the 2020 target for emissions reductions from 20 to 30%;
(b) to cancel the surplus of allowances permanently;
(c) to change the linear reduction factor;
(d) to extend the scope of the scheme to new sectors/gases;
(e) to limit access to international credits; and
(f) to apply discretionary price/supply management.[73]

The debate has concentrated subsequently on the surplus of allowances. In the short term, the surplus is to be fixed by back-loading future allowances, a strategy that eventually gained the assent of the European Parliament. [74] The prospect for the long term is to establish a statutory reserve mechanism.[75]

The 2009 amending Directive retained a role for international credits but sought to limit their access.[76] The 2013 implementing Regulation specifies that existing installations retain the entitlements they were granted in the Phase 2 national allocation plans or a share of 11% of the allowances that were allocated for free, whichever is higher.[77] The Regulation specifies that new operators of installations that did not receive free allocations or entitlements to international credits in Phase 2 may offset a maximum of 4.5% of verified emissions. The maximum for aircraft operators is 1.5% of verified emissions.

With a provision for 1.6 billion, existing installations still have a quota of around 0.4 billion units available to use for compliance in Phase 3. If units are used for compliance purposes in Phase 2, it is to be in exchange for free allowances. These free allowances may subsequently be banked for later use in Phase 3,[78] although the quota is to be used by March 2015.[79]

3.2. *Sectors*

If, on this evidence, offset shares seem hard to control, then restrictions on the sources and sectors from which offsets are drawn might prove to be more effective. The EU has learnt that the activities from which offsets are drawn are of variable quality. Accepting credits on a project by project basis was very permissive. Liquidity was

[73] European Commission, 'The State of the European Carbon Market in 2012', Report from the Commission to the European Parliament and the Council, 14 Nov. 2012, COM(2012) 652 final, at para. 4.

[74] Decision No. 1359/2013/EU amending Directive 2003/87/EC Clarifying Provisions on the Timing of Auctions of Greenhouse Gas Allowances [2013] OJ L 343/1.

[75] Further information is available at: http://ec.europa.eu/clima/policies/ets/reform/index_en.htm.

[76] Directive 2009/29/EC amending Directive 2003/87/EC so as to Improve and Extend the Greenhouse Gas Emission Allowance Trading Scheme of the Community [2009] OJ L 140/63.

[77] Regulation (EC) No. 1123/2013 on Determining International Credit Entitlements pursuant to Directive 2003/87/EC of the European Parliament and of the Council [2013] OJ L 299/32.

[78] Commission Regulation (EU) No. 389/2013 establishing a Union Registry pursuant to Directive 2003/87/EC, Decisions No. 280/2004/EC and No. 406/2009/EC and repealing Regulations (EC) No. 920/2010 and No. 1193/2011 [2013] OJ L 122/1.

[79] See S. Seppänen et al., *Demand in a Fragmented Global Carbon Market: Outlook and Policy Options* (Nordon, 2013), at p. 26.

enhanced, and with it the commercial viability of the market, but the environmental quality of the offsets depends on the CDM project approval process and brings into play the problems identified in Section 2 above.

Activities in two sectors have been the most troublesome. The EU had anticipated problems initially with certain categories of offset when it excluded credits for LULUCF activities from acceptance within the ETS. Access to this sector would have further enhanced the commercial viability of the supply of offsets; however, environmental sustainability seems to have been the overriding concern for this reservation. Sustainability concerns relate to the carbon storage capacity of soil and plants, the prerequisite that the activities are additional (that they would not otherwise have occurred) and permanent (that they will not be reversed before the benefit is achieved). Leakage (that mitigation activities will be countered by land clearance elsewhere) is a further concern.[80]

Even if they reduce carbon emissions, some LULUCF activities have deleterious effects on the environment, such as on water sources and biodiversity. For instance, large foreign monoculture plantations might be attractive propositions to commercial interests, but they can be bad for local agro-ecological systems. Unlike the voluntary markets, the compliance buyers might not discriminate. After all, the price for the offsets is driven by the interest in compliance. It is affected by the cost of alternatives such as allowances, but not by the sustainable development co-benefits that might ensue to the supplying locations.

Yet, at the same time, the caution about LULUCF activities is a source of regret. With tighter regulation, careful discrimination between activities, and insistence on a process that builds relationships between buyers, developers and locals, carbon farming and agro-forestry could make a contribution to sustainable development in the least developed countries (LDCs).[81] The Commission, however, is sensitive to political objections, which have been especially strong on the left of the political spectrum. It deals with the objections at close quarters since many NGOs, such as FERN and Friends of the Earth, maintain offices in Brussels. The Commission learns of the pressures on land tenure and food sovereignty of local communities and indigenous peoples. Stories about green grabbing multiply.[82] Even environmental foundations and philanthropists draw criticism for making the win-win pitch for carbon farming.[83] The Commission may now think that anti-logging measures in the

[80] European Commission, Decision Determining, pursuant to Directive 2003/87/EC, a List of Sectors and Subsectors which are Deemed to be Exposed to a Significant Risk of Carbon Leakage, C(2009)10251 final, 24 Dec. 2009.

[81] See, e.g., K. Tienhaara, 'The Potential Perils of Forest Carbon Contracts for Developing Countries: Cases from Africa' (2012) 39(2) *Journal of Peasant Studies*, pp. 551–72.

[82] See S. Böhm & S. Dabhi (eds), *Upsetting the Offset: The Political Economy of Carbon Markets* (MayFlyBooks, 2009). See also J. Fairhead, M. Leach & I. Scoones, 'Green Grabbing: A New Appropriation of Nature?' (2012) 39(2) *Journal of Peasant Studies*, pp. 237–61, and other articles in the same symposium issue.

[83] N. Klein, 'Green Groups May Be More Damaging than Climate Change Deniers', interview with Jason Mark, *Earth Science Journal*, 5 Sept. 2013, available at: http://www.earthisland.org/journal/index.php/eij/article/naomi_klein. See now N. Klein, *This Changes Everything: Capitalism v The Climate* (Allen Lane, 2014), Ch 6.

supply countries, backed by consumer information in the member countries, are more effective means to preserve forests.[84]

The Commission has balked at the administrative cost and governance challenge of assuring the environmental sustainability of LULUCF. Because the CDM has made only limited provision for LULUCF activities, the Commission has to look elsewhere for learning. If it wishes to expand this avenue for offsets, it might support the efforts in the UNFCCC to implement the UN Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD).[85] Indeed, the Commission has pledged to do so if no international agreement is reached.[86] However, the Commission has also held reservations about REDD. It would prefer to collaborate with jurisdictions like California and Australia that have been working on standards for carbon farming and forestry.[87]

The second sector to raise sustainability concerns is that of industrial gases. Once the offset market was under way, it became evident that reductions in the industrial gases HFC-22 and N_2O adipic dominated the offsetting efforts. By 2010, industrial gas reductions represented 81% of all CERs surrendered in the EU scheme.[88]

Several concerns arose. The supply affected the scheme's commercial viability. They were characterized as 'low hanging fruit': reductions that were cheap to make and consequently would be sold at a knockdown price.[89] They made compliance easy and energy companies in the Member States took advantage.[90] They did little for environmental sustainability because they were short-term savings. Their acceptance might even have created a perverse incentive: levels of production of HFC-22 were increased in order to claim to destroy the gas waste.[91]

The dubious quality of the industrial gas credits undermined the political legitimacy of the scheme. Stories in the media fuelled public cynicism in some Member States.[92] Moreover, 'advanced developing countries' appeared to have benefited most from

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84 European Commission, Communication on Addressing the Challenges of Deforestation and Forest Degradation to Tackle Climate Change and Biodiversity Loss, COM(2008)645 final, 17 Oct. 2008. See C. Overdevest & J. Zeitlin, 'Assembling an Experimentalist Regime: Transnational Governance Interactions in the Forest Sector' (2014) 8(1) *Regulation & Governance*, pp. 22–48.

85 Further information is available at: http://www.un-redd.org.

86 European Commission, Decision No. 406/2009/EC on the Effort of Member States to Reduce their Greenhouse Gas Emissions to meet the Community's Greenhouse Gas Emission Reductions Commitments to 2020 [2009] OJ L 140/136.

87 See Section 4 below, regarding the Californian scheme. For the solid work done in Australia, see Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth). See further E. French, '"Greenbacks" versus Green Credits: Has the Carbon Farming Initiative Got the Balance Right?' (2013) 30(5) *Environmental and Planning Law Journal*, pp. 434–51. However, with the change in national government, Australia's potential as a buyer or seller of offsets, domestic or international, is uncertain at the moment.

88 Sandbag Climate Foundation, 'Industrial Gas Big Spenders: HFC and N_20 Adipic Credit Usage in 2010', 2011, available at http://www.sandbag.org.uk/site_media/pdfs/reports/Sandbag_2011-05_HFC-N20_2010.pdf.

89 Gillenwater & Seres, n. 45 above, at p. 198.

90 Sandbag Climate Foundation, n. 72 above, pp. 26–30.

91 Gillenwater & Seres, n. 45 above, at p. 198.

92 See, e.g., D. Carrington, 'EU Plans to Clamp Down on Carbon Trading Scam', *The Guardian*, 26 Oct. 2010, available at: http://www.theguardian.com/environment/2010/oct/26/eu-ban-carbon-permits.

the sales.[93] The financial transfers to China were highly visible. Apart from the availability of cheap credits, there seemed little benefit to Europe.[94]

Following the Phase 2 review, the Commission made an amendment. Its January 2010 Regulation excluded from the scheme credits from industrial gas reductions.[95] Yet, the concession to established interests was generous. Such credits would be excluded only from 1 May 2013, which meant they could still be used in Phase 3. This applied not only to credits already in the system but also to credits from further projects which were registered within the advance notice period of six months. The United Nations Environment Programme (UNEP) DTU Partnership Centre on Energy, Climate and Sustainable Development estimated that another 412 million gas credits would be available.[96] This forewarning resulted in the installations accelerating their use of the credits in order to anticipate the deadline.

With regard to other potentially troubling sectors, the 2009 Directive gives the Commission the legal authority to apply measures 'to restrict the use of specific credits from project types'.[97] Additional sector-based restrictions are therefore possible, but the Commission has said that it is currently not considering any.[98] Instead, the EU plans to pursue sectoral crediting mechanisms with other countries. It intends 'to develop new mechanisms to scale up the use of carbon markets for climate finance and to provide better incentives for own mitigation action in developing countries'.[99]

It is uncertain whether this reform will end the relationship with the CDM. In August 2012, the EU Commission's DG CLIMA published a report that suggested design options for sectoral carbon market mechanisms.[100] It identified means by which to manage a transition from the CDM to the New Market Mechanisms. If this were to transpire, the EU could:

- carve out CDM projects from the sectoral boundary;
- phase out CDM projects as soon as possible;

93 See CDM projects by type and host region: UNEP DTU Partnership, Centre on Energy, Climate and Sustainable Development, 'CDM/JI Pipeline Analysis and Database', 1 Sept. 2014, available at: http://www.cdmpipeline.org.

94 L. Hermwille, R. Elsworth & H. Fechtner, 'Benefitting from Carbon Markets? German Participation in CDM and JI during the First Kyoto Commitment Period', JIKO Policy Paper 04/2013, 2013, available at: http://www.jiko-bmub.de/english/background_information/publications/doc/1349.php.

95 Regulation (EU) No. 550/2011 on Determining, pursuant to Directive 2003/87/EC, Certain Restrictions Applicable to the Use of International Credits from Projects Involving Industrial Gases [2011] OJ L 149/1.

96 UNEP-DTU Centre on Energy, Climate and Sustainable Development, n. 93 above.

97 Directive 2009/29/EC, n. 76 above, Art. 13(9).

98 European Commission, Staff Working Document, 'Information Provided on the Functioning of the EU Emissions Trading System, the Volumes of Greenhouse Gas Emission Allowances Auctioned and Freely Allocated and the Impact on the Surplus of Allowances in the period up to 2020', SWD(2012)234 final, 25 Jul. 2012.

99 Regulation (EU) No. 1123/2013 on Determining International Credit Entitlements pursuant to Directive 2003/87/EC [2013] OJ L 299/32.

100 Ecorys, 'Design Options for Sectoral Carbon Market Mechanisms and their Implications for the EU ETS', Final Report, CLIMAS.B.3/SER/2011/0029, 31 Aug. 2009.

- continue the CDM and deduct CERs from sectoral performance; or
- integrate CDM projects into a sectoral scheme.[101]

3.3. *Sources*

The EU ETS was initially accommodating about the countries from which offsets could be sourced. The main limitation was the lack of enthusiasm to source offsets domestically within Europe, either through JI or through internal schemes. The EU has now taken an emphatic step to adjust the scheme and to limit supply to the LDCs.[102]

The Commission has stated that the limitation on CER sources will give the LDCs some certainty about continuing access to the European compliance market.[103] The decision would promote a more equitable geographical distribution of the benefits of the offset market. So far, few CDM projects have been sourced in the LDCs.[104] However, the EU will have to tread carefully; some LDCs have major governance and justice issues.[105] The EU would need to assist them both bilaterally and by participation in the Global Climate Change Alliance.[106]

The decision to limit sources sends a message to other countries that Europe is no longer willing to shoulder the burden of reductions alone. The EU accepted credits from the CDM because it represented an opportunity to encourage reductions in countries without caps.[107] Some progress has been made (for example, sympathetic local constituencies have formed), but Europe has learnt that the impact of the CDM on the development of domestic mitigation policies has been negligible.[108]

The Commission does not want its compliance scheme to undermine the competitiveness of European industry.[109] Offsets have a particular significance, because they signal that European firms are paying for reductions in competitor countries like China, Mexico or Morocco. The sensitivity has increased now that Europe's circumstances have worsened. The EU economy is in the aftermath of a major recession and some

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101 Offset investors and compliance buyers say these regulatory options create uncertainty: see H. Derwent, *What's Wrong with Emissions Trading* (International Emissions Trading Association (IETA), 2010).

102 Directive 2009/29/EC, n. 76 above, Art. 1(13). Further information is available at: http://ec.europa.eu/clima/policies/ets/linking/faq_en.htm.

103 Ibid.

104 S.E. Lütken, 'Indexing CDM Distribution: Levelling the Playing Field', *CD4CDM Working Paper Series*, Working Paper No. 10, May 2011, available at: http://orbit.dtu.dk/fedora/objects/orbit:85995/datastreams/file_5571867/content. Though the report still argues they have been useful to these countries.

105 R. Pearse, 'Back to Land? Legitimation, Carbon Offsets and Australia's Emissions Trading Scheme' (2013) 25(1) *Global Change, Peace and Security*, pp. 43–60.

106 The Global Climate Change Alliance (GCCA) is an initiative of the European Union, launched in 2007 and coordinated by the European Commission, aimed at strengthening dialogue and cooperation on climate change with developing countries most vulnerable to climate change and supporting their efforts to develop and implement adaptation and mitigation responses. It focuses on the least developed countries (LDCs) and the small island developing states (SIDS). Further information is available at: http://www.gcca.eu.

107 Directive 2004/101/EC, n. 60 above, Preamble.

108 Interview with European Commission, Directorate-General for Climate Action, Brussels (Belgium), Oct. 2013.

109 But cf. Ellerman, Convery & de Perthuis, n. 65 above, Ch. 7.

developing countries are now wealthier than certain EU Member States. At the same time, traditional rivals like the US or Canada have not matched the EU's mitigation efforts.

The EU has tied the limitation of offset sources to the failure to achieve a new international agreement.[110] Should a satisfactory agreement be forthcoming, the EU might accept credits from countries that ratify the agreement. If the agreement increases the targets for reductions – on 1990 levels from 20 to 30% by 2010 (now passed) and to 60 to 80% by 2050 – then half of the extra reductions which the EU would need could come by way of offsets.

No new international agreement will emerge before late 2015. In the meantime, the Commission will work with other interested countries on a bilateral basis. Specifications will include the sectors from which offsets would be acceptable. Given the desire to see these countries adopt their own targets, Europe would advise on the baselines that would be acceptable for determining the additionality of reductions.[111] As well as its bilateral negotiations, it shares its experience with developing countries in the World Bank's Partnership for Market Readiness.

In sum, the Commission has been able to apply its learning to tighten the controls on offsets, but it is inhibited. These inhibitions – the preservation of existing entitlements and the cautious conditional closure of access to suppliers – owe as much to political legitimacy as they do to commercial viability. Arguably, commercial viability as well as environmental sustainability will be advanced by restricting the supply, improving the quality, and strengthening the price of offsets. However, the Commission concedes that it should provide investors with 'some certainty'. This is a nod to regulatory certainty or protection from sovereign risk.[112] The imperative of political legitimacy thus slows the speed with which learning can be put to work for environmental sustainability. The difficulty in reconciling the two is that investment in the production of better offsets has a long lead time. Spending banked credits or buying them on the spot market, on the other hand, is quickly done. For project investors, it now seems better to wait and see if there will be demand for offsets beyond 2020.[113]

4. CALIFORNIA

The Californian emissions trading scheme only commenced in 2013, but its regulators clearly have had the benefit of learning. They have learnt from other schemes as well as from the experience gained in the methodical implementation of their own scheme. This learning has led the agency to regulate strictly each of the four components of policy we have identified (offset shares, sources, sectors and standards) while continuing to experiment and in particular to improve the environmental sustainability of forestry offsets.

The Californian scheme is sub-national, yet has the most extensive geographical coverage after the EU ETS. A large economy by world standards, it creates a compliance

110 Directive 2009/29/EC, n. 76 above, Art. 1(13).

111 Further information is available at: http://ec.europa.eu/clima/policies/ets/linking/faq_en.htm.

112 Ibid.

113 Carbon Market News, '"Zombie" CO_2 projects on the Rise as CDM Hits 7,000', *Point Carbon*, 9 Jul. 2013, available at: http://www.trust.org/item/20130710094230-sjwk5.

obligation for some 60% of the state's industries and 85% of its emissions.[114] Several reasons are advanced as to why California took this initiative after the failure of the national government to make a Kyoto commitment and adopt a cap-and-trade scheme.[115] They include the history of the environment movement in the state, the experience of energy trading, and the enthusiasm of its political elite, including then governor Arnold Schwarzenegger.

For the implementation and administration of the Californian scheme, the enabling legislation, the Global Warming Solutions Act of 2006,[116] gives executive responsibility to the California Air Resources Board, an agency appointed by the state governor.

The Californian regulators have had the benefit of learning from EU experience. More directly, California was party to the substantial preparations undertaken within the Western Climate Initiative (WCI) – a nine-member compact of US states and Canadian provinces.[117] California has consulted with the RGGI, the cap-and-trade scheme that operates in the north-eastern states of the US within the electricity utility sector, and has studied the protocols developed for the voluntary market by bodies such as the American Carbon Registry and the Climate Action Reserve.[118]

In turn, others are learning from California. Learning is necessary if Quebec is to link its new scheme with California.[119] Two other WCI provinces, British Columbia and Ontario, are in discussions with Californian regulators. The other US members of the WCI have delayed implementation; states such as Oregon and Washington are watching the Californian experience closely.[120] The RGGI will not be linked, yet it has borrowed from California's forestry protocol.[121] Californian regulators have visited the Commission in Brussels and taken part in the World Bank's Partnership for Market Readiness. When designing components of their compliance scheme, Australian regulators visited California on a number of occasions.[122]

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114 Air Resources Board, 'Overview of Californian Emissions Trading Program', 20 Oct. 2011, available at: http://www.arb.ca.gov/newsrel/2011/cap_trade_overview.pdf.

115 J. Knox-Hayes, 'Negotiating Climate Change Legislation: Policy Path Dependence and Coalition Stabilization' (2012) 6(4) *Regulation & Governance*, pp. 545–67.

116 Global Warming Solutions Act of 2006 (State of California).

117 WCI, 'Design Summary: Design for the WCI Regional Program', 27 Jul. 2010, available at: http://www.westernclimateinitiative.org/component/remository/general/program-design/Design-Summary.

118 Further information about the American Carbon Registry is available at: http://american-carbonregistry.org. For further information about California's cap-and-trade programme and the Reserve's role in it, see Climate Action Reserve, 'California Compliance Offset Program', available at: http://www.climateactionreserve.org/how/california-compliance-projects.

119 Agreement between the California Air Resources Board and the *Gouvernement du Québec* Concerning the Harmonization and Integration of Cap-and-Trade Programs for Reducing Greenhouse Gas Emissions, available at: http://www.arb.ca.gov/cc/capandtrade/linkage/ca_quebec_linking_agreement_english.pdf.

120 G. Gonzalez, 'Can Oregon and Washington Price Carbon Pollution?', 17 Apr. 2014, available at: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=10303.

121 J. Greenwald, 'RGGI Changes Help Both the Business and Environment', *Center for Climate and Energy Solutions*, 20 Feb. 2013, available at: http://www.c2es.org/blog/greenwaldj/rggi-changes-help-both-environment-business.

122 The now defunct US-Australian Dialogue on Carbon Pricing, available at: http://policyinstitute.ucdavis.edu/informing-policy-3/dialogues-and-conferences/us-australia-dialogue-on-carbon-pricing.

The Californian scheme is careful not to sacrifice environmental sustainability for commercial viability. The target for reductions is to return, by 2020, to 1990 levels of emissions or to 15% below 2005 levels. The majority of reductions are to be made at source and, where the scheme makes allowances available, the covered entities must buy them at auction rather than receive them for free.[123] Sustainability might still be a concern, as auction prices started low, certainly too low to drive fuel switches. Yet, the Air Resources Board asserts that it looks to the revenue collected, rather than the price of allowances, to encourage investment in new clean energy technologies.[124]

4.1. *Shares, Sectors and Standards*

Giving offsets a place in the Californian scheme adds to the options for cost-effective compliance. It is also seen as a means to reward emissions reductions in sectors that remain uncapped. Yet, while the WCI recommendations envisaged that offsets could meet as much as 49% of compliance overall, the Californian legislation restricts the volume to 8% of a covered entity's total obligations.[125] California's main regulatory concern regarding offsets is, therefore, to ensure they do not become a major share. This caution enables California to be very discriminating about the offsets it accepts.

Offsets are accepted strictly on a sectoral basis. To date, the following five activities have been recognized:

- projects to destroy ozone depleting substances;
- livestock projects (essentially methane reductions);
- urban forest projects;
- US forest projects; and
- coal methane capture projects.[126]

Approvals commenced with a set of early action offsets – the translation of earlier voluntary offsets from these sectors into scheme offsets. In April 2014, the first forestry offsets were issued to the Yurok Indian Tribe to preserve and manage hardwood forests in the north of the state.[127] Regulations are being formulated for at least one further activity – namely, rice cultivation projects.[128]

123 Global Warming Solutions Act of 2006, §95910.

124 Air Resources Board, 'Cap-and-Trade Auction Proceeds Investment Plan: Fiscal Years 2013–14 through 2015–16', 14 May 2013, available at: http://www.arb.ca.gov/cc/capandtrade/auction-proceeds/final_investment_plan.pdf.

125 Global Warming Solutions Act of 2006, §95854.

126 Global Warming Solutions Act of 2006, §95973. For the protocols, see Air Resources Board, 'Compliance Offset Program', 10 Sept. 2014, available at: http://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm.

127 Carbon Market News, 'California Issues First Forestry Offsets for Carbon Market', *Point Carbon*, 9 Apr. 2014, available at: http://www.reuters.com/article/2014/04/09/california-carbonoffset-idUSL2N0N12GR20140409. At the same time, however, the Board is having to check the validity of some credits it has already accepted: see Carbon Market News, 'California Investigating Validity of 4.3 Million Carbon Offset Credits', *Point Carbon*, 5 Jun. 2014, available at: http://www.reuters.com/article/2014/06/05/usa-california-carbonoffset-idUSL1N0OM01R20140605.

128 Further information is available at: http://www.arb.ca.gov/cc/capandtrade/protocols/riceprotocol.htm.

Following the WCI preparations, Californian legislation set ambitious regulatory standards for offsets. Offsets must be real, additional, quantifiable, permanent, verifiable and enforceable.[129] These qualities are to be assured through various means, including the design of the enabling Regulation, the application of standardized compliance offset protocols, the use of accredited third-party verifiers, and the approval and oversight of project registries.

The WCI recommended that the protocols of Member States employ sector- or activity-based performance standards.[130] Regulatory costs can be controlled by categorizing whole sectors or activities in or out of the scheme. Nonetheless, fine distinctions can be made, embracing the forestry sector for instance, and then distinguishing native from imported trees, or preservation from plantation. A negative list can be used, not only to rule out hard-to-ascertain effects, but also to exclude activities that, although they mitigate carbon emissions, have adverse effects on the natural or social environment.

California chose not to publish negative lists. It was lobbied by industry to allow some forest clearing and replanting activities.[131] It decided to embrace some forestry activities, but to be careful about selection. To this end, California needed to establish a benchmark to gauge project additionality. It selected the criterion of 'common practice' to distinguish mitigations that would occur in any event. Common practice would be ascertained according to percentage market penetration rates for similar activities, such as new technologies.[132]

The protocols were researched and written with care. US administrative law routinely makes big demands on regulators. By force of legislated procedures and judicial review, such demands affect both the rule-making stage and the decisions on individual cases. Moreover, the offsets policy has been challenged substantively. Amendments were proposed in the state congress to prohibit the sourcing of offsets out of state. An environmental group brought an action in the state courts to proscribe the use of offsets for compliance.[133]

The Board's offsets protocols also distinguish mitigations that had been required by law, and therefore adopted in compliance with an alternative environmental or conservation regulation. This criterion furthers additionality, although the Board has received representations that it should make exceptions.[134] The Board has resisted a policy of crediting activities merely because they have environmental or social co-benefits. Such benefits might, for example, consist of bringing revenue to poor,

129 Global Warming Solutions Act of 2006, §95970.

130 WCI, 'Offset System Essential Elements Final Recommendations Paper', 26 Jul. 2010, available at: http://www.westernclimateinitiative.org/component/remository/Offsets-Committee-Documents/Offsets-System-Essential-Elements-Final-Recommendations.

131 See M. Mitra & M. Stoll, 'California Market for Hard-to-Verify Carbon Offsets Could Let Industry Pollute As Usual', *Earth Island Journal*, 3 Jul. 2013, available at: http://www.earthisland.org/journal/index.php/elist/eListRead/californias_market_for_carbon_offsets_could_let_industry_pollute_as_usual.

132 B. Aguila, 'California's Compliance Offset Program', 2 Mar. 2014, available at: https://www.thepmr.org/system/files/documents/ARB%20Offsets%20PMR%20webinar%202014%20FINAL_Mexico.pdf.

133 On 25 Jan. 2013, the San Francisco Superior Court rejected a challenge to the offsets policy: see *Citizens Climate Lobby* v. *California Air Resources Board*, Cal. Super. Ct., No. CGC-12-5195544 (25 Jan. 2013).

134 Interview with Air Resources Board, Sacramento, CA (US), May 2013.

marginalized or indigenous groups. In the Board's view, these benefits could cloud the scheme and are better pursued through direct grants.[135]

4.2. *Sources*

The Californian scheme also discriminates in respect of the locations from which offsets may be drawn: they must be sourced from locations within the US, Canada or Mexico.[136] Commercial viability and political legitimacy are relevant factors in this configuration, while environmental sustainability is arguably the strongest consideration.

Even if the share for offsets has been limited to 8%, California must find a commercial supply of offsets. Linking with other jurisdictions within the WCI increases the options. California has linked with Quebec because it, too, has instituted a cap-and-trade system. The two states cooperated in the WCI preparations and have been coordinating since. California is therefore confident that its partner observes high standards for offsets, which fosters environmental sustainability.[137] California can accept Quebec's offsets, though it still attracts political opprobrium for sending revenue out of the state.

These considerations play into California's decision not to accept CDM CERs. For California, to accept CERs was to relinquish regulatory control. Concerns over the environmental sustainability of these credits are compounded by political legitimacy challenges. In US politics and media, Chinese manufacturers are often seen as direct competitors with US industry.

Yet, California has nominated 11 rainforest locations as possible external sources of offset. Californian regulators have been working to foster forestry offsets in the Mexican state of Chiapas; the Californian offset market might therefore provide an incentive for mitigation action in Chiapas. Mexico is a close neighbour and constitutes a potential carbon leakage risk for California. At some point, so the thinking went, the reductions could become part of a national Mexican cap-and-trade scheme. However, the California–Chiapas connection was quickly criticized for undermining progress towards such a goal, and also for endangering local forest communities.[138] California is now discussing a sectoral rather than project by project approach with Chiapas, so that additionality can better be assured.

California could link with developing countries by accepting credits through REDD. The Californian outreach to Acre in Brazil is a move in this direction.[139]

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135 Ibid.

136 Global Warming Solutions Act of 2006, §95972.

137 On 12 Dec. 2012, Quebec adopted three offset protocols, which were made available for public review during a consultation period. They also respond to the comments from the staff of the California Air Resources Board to ensure programme harmonization. For further information see the Environment Quality Act (Quebec), Ch. IV, available at: http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/Q_2/Q2R46_1_A.HTM.

138 E.g. Greenpeace, *Outsourcing Hot Air: The Push for Sub-National REDD Offsets in California's Carbon Market from Mexico and Beyond*, Sept. 2012, available at: http://www.greenpeace.org/international/Global/international/publications/forests/2012/REDD/OutsourcingHotAir.pdf.

139 M. Peters-Stanley, 'Offset Providers Ink Deal over Landmark Forest Conservation Project in Acre, Brazil', *Ecosystem Marketplace*, 24 Jan. 2013, available at: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=9564&section=news_articles&eod=1.

However, for the time being, California is still formulating its own standards for accepting REDD.

In sum, on shares, sectors, sources and standards, the Air Resources Board has learnt to formulate and fine-tune the scheme's offset components with a certain precision. So far it has withstood challenges; the Board is aware that it is viewed as a test case in the US.[140] Offsets and emissions trading schemes have recently received a further fillip since they are included among the strategies approved by the Obama administration for coal-fired plants to meet their emissions reduction obligations under the new federal regulations.[141]

5. REGIONAL GREENHOUSE GAS INITIATIVE

The other US scheme is the Regional Greenhouse Gas Initiative (RGGI), an emissions reduction scheme for electricity power generators, which is established in the north-eastern states of the US, including the large states of Massachusetts and New York.[142] At the heart of the scheme is a cap on emissions, which may be met by reductions at source, or by the purchase of allowances to emit at auction or on the secondary market, or by the purchase of offsets.

The RGGI, too, has learnt to regulate offsets cautiously. Offsets figure only marginally at the moment. Under normal conditions, covered entities are allowed to meet 3.3% of their total obligations during a compliance period through offsets.[143] If the price of emissions allowances climbs to a trigger point, up to a 5% share in stage one and a 10% in stage two, offsets become more widely available.[144] Already, further controls are afoot with a plan to confine offsets to a cost containment fund.[145]

The RGGI scheme also regulates offset sources, sectors and standards carefully. Offsets must be sourced in the Member States. The RGGI concedes that its members might consider taking credits from UNFCCC schemes or from other compliance schemes, should stage two be triggered.[146] So far this has not eventuated.

Offsets are currently confined to four possible activities, which have been selected to encourage reductions in sectors that are difficult to place under a cap. They are:

- landfill methane capture and destruction;
- the avoidance of agricultural methane emissions;

140 Interview with Air Resources Board, Sacramento, CA (US), May 2013.

141 The states may choose measures to meet the goal, including market-based trading programmes: see US Environmental Protection Agency, 'Clean Power Plan Proposed Rule', 14 Aug. 2014, available at: http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule.

142 RGGI, 'Overview of RGGI CO_2 Budget Trading Program', Oct. 2007, available at: www.rggi.org/docs/program_summary_10_07.pdf.

143 RGGI, 'Model Rule', XX-6.5(a)(3)(i).

144 Ibid., XX -6.5(a)(3)(ii) and (iii).

145 Further information is available at RGGI, 'RGGI 2012 Program Review: Summary of Recommendations to Accompany Model Rule Amendments', at p. 2, available at: http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Recommendations_Summary.pdf.

146 RGGI, 'Model Rule', XX-1.2 (z)(bl) and XX-6.5 (3)(ii).

- the mitigation of emissions from oil, gas and propane end-use combustion; and
- carbon sequestration as a result of afforestation.[147]

Members have the choice not to source any one of these activities locally, though they should still accept offsets from other states that have done so. For instance, Massachusetts is prepared to take up the forestry option, while New York is inclined not to do so because its forests are small and are largely part of the public domain.[148] RGGI has an offsets working group through which Member States develop protocols together and the RGGI secretariat gives technical and administrative support to each of the schemes.

The RGGI states take care in developing the environmental sustainability standards for the offsets. Like the Californian Air Resources Board, it deploys the criteria of common practice and regulatory requirement (such as US Environmental Protection Agency requirements) to rule out reductions.[149] Like California, the RGGI has learnt to control the shares, sectors and sources in which offsets may be accessed. Yet, its learning also advances standards, so that the reach of offsets can be extended to environmentally significant but troublesome areas such as forestry.[150]

6. CHINA

China demands attention as the main EU supplier of CERs under the CDM. Furthermore, a Chinese domestic offsets scheme is being established to supply emissions trading schemes in its provinces and cities. Chinese authorities have learnt from the CDM and this learning is being applied to the domestic offsets scheme. Despite its reputation as a command-and-control society, China must also learn to manage commercial viability, environmental sustainability and political legitimacy.

The link with the CDM and the EU ETS has been vital for the commercial viability of offset projects in China. A study of 579 registered CDM projects found that the benefits were primarily economic rather than environmental.[151] However, Chinese regulators have also learnt about environmental sustainability. Gradually, the standard-setting practices of the CDM EB have filtered through to the Chinese authorities. For instance, they have helped to address the question marks over the additionality of Chinese projects.[152]

A recent review finds that the CDM has helped to build technical and institutional capacities within China.[153] The National Development and Reform Commission

147 Ibid., XX-10.3. See RGGI, 'CO_2 Offsets', available at: http://rggi.market/offsets/process.

148 Interview with RGGI, Albany, NY (US), May 2013.

149 RGGI, 'Model Rule', XX-10.5.

150 As an indication that it would go ahead with offsets, on 11 Mar. 2014 the RGGI released a request for proposals for US Forest Projects Offset Protocol Document Services. For further information see RGGI, 'Request for Proposals #14-01: U.S. Forest Projects Offset Protocol Model Document Services', 10 March 2014, available at: http://www.rggi.org/docs/Forestry_Offsets_Model_Docs_RFP_2014-03-10.pdf.

151 Thomas, Dargush & Griffiths, n. 52 above.

152 G. He & R. Morse, '"Addressing Carbon Offsetters" Paradox: Lessons from Chinese Wind CDM' (2013) 63 *Energy Policy*, pp. 1051–5.

153 X. Jiang & F. Hao, 'Legal Issues for Implementing the Clean Development Mechanism in China' (2011) 4(1) *Journal of East Asia and International Law*, pp. 7–40. See further X. Jiang, *Legal Issues for Implementing the Clean Development Mechanism in China* (Springer, 2013).

(NDRC), the central planning powerhouse, serves as China's designated national authority.[154] In each supplier country, these authorities have important roles in assessing whether participation in CDM projects is voluntary and whether the projects assist the host country in achieving its sustainable development goals.[155] As CDM designated operational entities, Chinese offset verification services have also become familiar with regulating offsets.

As China's participation in the offset markets has been voluntary as a seller rather than a buyer, the political legitimacy of these CERs arguably has not been a major concern within China. Some projects reputedly have had perverse social and environmental effects, such as the displacement of local people, which has raised concerns in the EU. As noted above, new CDM projects will not have access to the European scheme unless the governments can reach a bilateral supply agreement under a New Market Mechanism or a Sectoral Crediting Mechanism.[156] The Chinese authorities might respond to the EU but they might choose to develop the domestic market instead.

Without such an international market, the commercial viability of the offset projects will depend on the level of demand from the domestic compliance schemes. Pilot programmes are running in four municipalities (Beijing, Shanghai, Tianjin and Chongqing), two provinces (Hubei and Guangdong), and one city (Shenzhen).[157] Offsets are given a share of these markets. For the purpose of supply to these markets, the NDRC has created the concept of the Chinese CER (CCER).[158]

For the time being, local regulators are left to decide the volumes or shares of offsets they accept and the sources and sectors from which they draw CCERs within China. It is salutary to note that these local regulators control demand very much in the way that the US and, belatedly, the EU schemes are doing. Volumes are limited between 5 and 10% (see Table 1 below). Some show a tendency to favour, if not to confine, the sources to their own localities. If they accept CCERs from other Chinese provinces and locations, it is to encourage those without their own schemes to mitigate. The programmes also make positive and negative lists of sectoral activities. Beijing, for instance, excludes industrial gases and hydro-electricity projects as eligible credits that can be used by liable entities to discharge liabilities.[159]

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154 Operation and Management Measures of the Clean Development Mechanism Projects (People's Republic of China) NDRC, Ministry of Science and Technology, Ministry of Foreign Affairs and Ministry of Finance, Order No [2011] 11, 3 Aug. 2011.

155 UNFCCC, 'Designated National Authorities', available at: http://cdm.unfccc.int/DNA/view.html?CID=46.

156 W. Cai, C. Wang, J. Chen & S. Wang, 'Sectoral Crediting Mechanism: How Far China Has to Go' (2012) 48 *Energy Policy*, pp. 770–8. See further A. Carrapatoso, 'Climate Policy Diffusion: Inter-regional Dialogue in China-EU Relations' (2011) 23 *Global Change, Peace & Security*, pp. 177–94, at 193.

157 NDRC Notice on Initiating Pilot Emissions Trading Programs (People's Republic of China) NDRC, Order No. [2011] 2601, 29 Oct. 2011.

158 Interim Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Transactions (People's Republic of China) NDRC, Order No. [2012] 1668, 29 Oct. 2011.

159 Interim Measures for Regulating the Offset Scheme in Beijing's Pilot Program (People's Republic of China) Beijing Municipal Development and Reform Commission and Beijing Municipal Forestry Bureau, Order No. [2014] 6, 1 Sept. 2014.

At the same time, the NDRC has been given a central role in regulating the supply of CCERs. It has published methodologies for the approval of CCER projects.[160] Of the 178 methodologies to date 173 are adopted from the CDM; the remaining five methodologies have been developed with the State Forestry Administration to encourage LULUCF activities, for instance in the western provinces. The NDRC has not excluded any activities categorically from the supply of CCERs and, notably, industrial gas waste reduction is included among the methodologies. Significantly, the NDRC has promulgated measures that enable CDM projects to be translated into the domestic scheme.[161] The main control on this translation seems to be a concern to avoid the credits being double counted.

Notwithstanding its inclusive approach, the NDRC has learnt to regulate cautiously. A broad range of credits have been controlled for reasons of commercial viability or environmental sustainability. By July 2014, 184 projects had reached the threshold validation stage, with wind, hydro and solar energy, along with methane reduction, best represented.[162]

In sum, the regulation of domestic demand for offsets in China is currently split between the local schemes. This fragmentation responds to political legitimacy demands, but it makes the commercial viability of the offsets uncertain. At the same time, environmental sustainability is important enough to give the NDRC a central role. As China moves towards a national cap-and-trade scheme, this role gains significance. Its position is a legacy of its role in the CDM but it also has parallels with the control that the European Commission is assuming over the Member States within the EU ETS. The NDRC could tighten the standards for offsets in China.

7. WHAT HAS BEEN LEARNT?

The case studies show that regulators apply learning to improve the functioning of the offset markets. Improvements are seen in the adjustments to the various pieces of legislation that structure the schemes. Interestingly, the improvements that public regulators wish to make do not give the markets more freedom. On the contrary, the lesson is to leave less discretion to the markets, while endeavouring to keep the markets operating.

Therefore, in contrast to the distinction Scott makes between control and learning,[163] we find that in the regulation of offset markets learning does not replace control. Instead, learning may recommend more technology and politics – and more law.[164] Consequently, this variant of marketized governance may not qualify as fully

160 For further information see China Certified Emission Reduction Exchange and Info Platform, available at: http://cdm.ccchina.gov.cn/zylist.aspx?clmId=162.

161 Interim Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Transactions, n. 158 above, Art. 13. Carbon Market News, 'China to Inject around 6 Million Offset Credits into Domestic Carbon Market', *Point Carbon*, 5 Jun. 2014, available at: http://uk.reuters.com/article/2014/06/05/china-carbon-idUKL3N0OM0V520140605.

162 China Certified Emission Reduction Exchange and Info Platform, 'Validated Projects', available at: http://cdm.ccchina.gov.cn/sdxm.aspx?clmId=163.

163 Scott, n. 2 above, at pp. 62–3.

164 A finding that Bogojević (n. 18 above, at p. 50) makes about the EU ETS overall.

reflexive governance in Scott's terms, because it places external regulatory controls on market participants and thus allows only limited internal market reflexivity.[165] It is better seen as a form of meta-regulation, which is more controlling than regulation that encourages the participants to learn, while leaving decision making entirely to them.[166] Nonetheless, consistent with Broussau and Glachant, learning occurs in the sense that public regulators learn to make improvements to the control settings of the scheme.[167]

Across the schemes, we find that regulation aims to tighten the markets in offsets in four respects (as shown in Table 1 below):

1. *Volumes or shares* Regulation reduces to a minority share the extent to which offsets may contribute to compliance compared with other means, such as reductions at source or surrender of allowances.
2. *Sources* Regulation restricts the locations or jurisdictions from which offsets may be drawn either to domestic sources or a small group of LDCs that cannot be expected yet to have their own compliance scheme.
3. *Sectors* Regulation establishes positive and negative lists of the activities on which offsets may be based in uncapped sectors. Regulation excludes reductions in industrial gases and takes a cautious approach to land care and forestry.
4. *Standards* Regulation becomes more technical. Regulation seeks to standardize the measures of the offsets' environmental sustainability, giving particular attention to the assessment of additionality.

The tighter controls are an indication that public regulators respond to what they have learnt. In this vein, if the offsets form too large a share of the markets, the buyers' compliance is made easier, but the plummeting price reduces the incentive to make reductions at source and it discounts alternative potential benefits, for example, for sustainable development. If the sectors and sources outside the current compliance schemes are too free to sell offsets, this undermines their incentive to institute their own caps. If standards are too loose, it is easier for suppliers to comply, but offsets may be corrupted or degraded.

In this learning to control, we find that an initial preoccupation with commercial viability has given way to a concern to assure environmental sustainability. We regard this as positive for environmental regulation. Still, we have yet to see whether all the changes will be effective. The public regulators cannot be entirely sure that the new settings will further environmental sustainability. For instance, greater standardization may make it easier to verify credits but might make it hard for the diverse, small-scale projects in the LDCs to gain approval.[168] Hence, the net mitigation effect would be assured but co-benefits would be missed.

Moreover, if the lesson is to apply more controls, political legitimacy may not always favour this correction to the regulation. As Paterson suggests, improvements

165 Scott, n. 2 above, at pp. 48–51.
166 Gilad, n. 5 above, at p. 488.
167 Brousseau & Glachant, n. 17 above, at p. 36.
168 Lovell & Liverman, n. 57 above, at p. 265.

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		Sources	Sectors	Standards
EU ETS	Up to the higher of two limits: the international credit entitlement specified in the national allocation plan for Phase 2; OR 11% of the free allocation of EU allowances granted to them in that period	Certified emissions reductions (CERs) from the CDM	Eligible sectors of offsets under the CDM except forestry and industrial gases	Substantive and procedural requirements under the CDM
California ETS	Up to 8% of their total compliance obligation for each compliance period	Air Resources Board offsets	Ozone depleting substances projects; livestock projects; urban forest projects; forest projects	AB 32 requires that offsets used or compliance must be real, additional, quantifiable, verifiable, permanent and enforceable
RGGI	*Normal situation* Up to 3.3% of a source's total compliance obligation during a control period *Stage one trigger* Offset credits allowed is expanded to 5% *Stage two trigger* Offset credits allowed is expanded to 10%	*Normal situation and Stage one trigger* RGGI Member States and eligible offsets from other states *Stage two trigger* Eligible credits from other countries and also the UNFCCC	Landfill methane capture and destruction; reduction of sulphur hexafluoride (SF_6); afforestation; reduction or avoidance of CO_2 from natural gas, oil, or propane end-use combustion from end-use energy efficiency; avoided methane emissions from agricultural manure management operations; eligible projects under the UNFCCC (Stage two trigger)	Real, additional, verifiable, enforceable and permanent; highly prescriptive standards developed for specific project categories
China ETS Pilots	Up to a certain percentage for each compliance period at various pilot programmes in Beijing (5%), Shanghai (5%), Tianjin (10%), Chongqing (8%), Hubei (10%), Guangdong (10%), and Shenzhen (10%)	China certified emissions reductions (CCERs)	Beijing: CCERs (50% from local) Shanghai: CCERs, incl. land Tianjin: CCERs Chongqing: local CCERs Hubei: local CCERs	Substantive and procedural requirements modelled on the CDM

Table 1: Offset Regulation from the Selected Compliance Schemes (compiled by authors)

to environmental sustainability, such as a more discriminating demand for offsets and more rigorous verification of the supply, may bolster the political legitimacy of the offset schemes.[169] However, as Gilad warns, the regulatory agenda for emissions control might not be stable enough to allow time to reap the benefits of learning; the schemes may lack the political support that regulators need to correct initial errors for the sake of long-term improvements.[170] The political conditions matter.

If learning is built into the offset schemes, the improvements are not necessarily easy to achieve because the particular lessons were not altogether anticipated or desired. The glut of cheap offsets is one such outcome. Those who invested in the regulation now take legislative and judicial action to protect their investments, arguing, for instance, that they have rights to preserve or accountability to uphold. Consequently, improvements are delayed or diluted. Symptomatic of this problem is the time conceded within the EU ETS for the existing credits to be used up before the exclusions apply. A further indication would be if the NDRC in China too readily enables unsold CDM credits to be used in the domestic offsets scheme.

Despite these inhibitions, we do see some positive changes. We appreciate that, to critics of market mechanisms, the changes are merely 'technical fixes' to a system that is basically unsound.[171] The market mechanism should make way for superior approaches to obtaining emissions reductions.[172] We agree there are superior approaches; however, we question whether the obstacles to change are confined to market mechanisms. Moreover, market mechanisms do have certain regulatory strengths when compared with other approaches.[173] Given the positive findings from the case studies, it is important not to exaggerate the shortcomings of offsets. There is promise in all the schemes, and the December 2015 UNFCCC summit in Paris might ultimately deliver a new multilateral agreement to consolidate them. Perhaps the challenges that beset offset markets are just a reminder that large-scale environmental regulation is not easy to achieve. The problems are not insuperable; persistence is required.

8. CONCLUSIONS

The main lesson for the regulation of offset markets is that the markets should be more tightly controlled than they were initially. Consequently, the market shares for offsets, and the sectors and sources from which offsets may come, are reduced. These controls are meant to safeguard the commercial viability of the schemes against easy

169 Paterson, n. 10 above, at p. 363.

170 Gilad, n. 5 above, at p. 498. Australia provides confirmation of this now that the carbon pricing mechanism and emissions trading scheme have been repealed. One effect is the elimination of a compliance market for offsets. For further information see Australian Government, Department of the Environment, 'Repealing the Carbon Tax', available at: http://www.environment.gov.au/climate-change/repealing-carbon-tax.

171 For instance, Lohmann, n. 16 above, at p. 248.

172 R. Baldwin, 'Regulation Lite: The Rise of Emissions Trading' (2008) 2(2) *Regulation & Governance*, pp. 193–215.

173 Though this is not the place to make a comparison of the merits of the broad types (command-and-control, market mechanism and new governance); our research has been confined to a particular instance of the market mechanism.

compliance options and to assure the environmental sustainability of the schemes against doubtful emissions reductions.

This study confirms that offset regulation has weak spots, if not fatal flaws. Significantly, it remains technically challenging to gauge whether many offsets are genuine reductions. Furthermore, some offsets that are genuine reductions come with other environmental and social costs. Compliance schemes depend on co-regulators with potentially lax governance systems. Alternatively, they rely more on domestic resources and shut out external sources of supply. The schemes' regulators must continue to field political challenges from both proponents and opponents of offsets. Offsets therefore remain unreliable as instruments to mitigate climate change.

Still, our studies have found positive signs. While shares have shrunk, each of the schemes has kept a compliance role for offsets. Each of the compliance schemes has determined that it will not source offsets in regions or countries that are not moving towards their own cap-and-trade schemes. Nonetheless, support will be forthcoming for those that are clearly in need of assistance to implement mitigation measures. The schemes encourage emissions reductions in a variety of sectors, while dubious activities such as reductions in industrial gas wastes are being regulated, and the regulation of the promising but troublesome sector of land care and forestry offsets receives more attention. There is an effort to improve standards for assessing the additionality or net mitigation effect of offsets. Regulators learn to improve their own schemes and the learning is available for others to adopt, such as the other compliance schemes, the voluntary efforts, the national green funds and the new UNFCCC Green Climate Fund. Properly regulated, it is possible that offsets may still play a useful role in climate mitigation.